

CLAIMS:

1. Process for preparing a suspension of a particulate, preferably siliceous, filler in a material formed by a silicone oil comprising:

- 5           - polyorganosiloxanes (POS fluids) of type (I) which carry Si-alkenyl - preferably Si-vinyl - functional groups capable of reacting with the Si-H crosslinking functional groups of a POS fluid of type II,
- 10           - optionally, POS fluids of type (II) which carry Si-H crosslinking functional groups capable of reacting with the Si-alkenyl functional groups of the POS fluids (I),
- and/or, optionally, POS fluids of type (III)
- 15           which differ from the POS fluids (I) and (II),

the said suspension being able to be used, in particular, for producing silicone compositions that can be cured by polyaddition,

- 20 this process being of the kind of those in which the particulate filler is treated with the aid of a compatibilizing agent or compatibilizer (CA),

characterized in that it essentially consists in introducing some compatibilizer (CA) into the

25 preparation mixture:

- on the one hand, before and/or substantially simultaneously with the contacting of at least part of

the silicone oil employed with at least part of the particulate filler used, this CA introduction taking place in one or more steps for a CA fraction corresponding to a proportion of at most 8%, preferably at most 5% and even more preferably at most 3% by dry weight with respect to the total particulate filler;

• and, on the other hand, after this POS/filler contacting.

2. Process according to Claim 1,  
characterized in that it essentially consists:

\* in mixing:

- 100 parts by weight of silicone oil
- 0 to 5 parts by weight of water
- 20 to 80 parts by weight of particulate filler consisting of silica
- 1 to 20 parts by weight of compatibilizer (CA) selected from silazanes taken by themselves alone or as a mixture thereof, preferably from disilazanes, hexamethyldisilazane which may or may not be combined with divinyltetramethyldisilazane being particularly preferred;

\* in leaving the above to react, preferably with stirring,

\* in heating the mixture obtained, choosing a pressure/temperature pair so that at least

some of the water and of the volatile elements undergoes devolatilization;

\* if necessary, in cooling the mixture.

3. Process according to Claim 1 or 2,

5 characterized in that:

- all or some of the silicone oil, the water and all or some of the particulate siliceous filler are mixed with a first CA fraction of between 1 and 3% by dry weight with respect  
10 to the silica,
- a second CA fraction, representing between 10 and 15% by dry weight of silica, is incorporated into the mixture,
- optionally, the rest of the silicone oil and  
15 the rest of the silica are added,
- the mixture is allowed to react, preferably by continuing the mixing,
- the mixture is devolatilized,
- optionally, the devolatilized mixture is  
20 allowed to cool
- and, optionally, the suspension is completed with the rest of the silicone oil.

4. Process according to Claim 3,

characterized in that:

- 25 - 1. a mixture comprising the silicone oil, the water and the first CA - preferably HMDZ - fraction is homogenized,

- 2. the particulate filler, preferably silica, is gradually added to the mixture obtained at 1,
- 3. the mixing is continued,
- 5 - 4. the second CA - preferably HMDZ - fraction is gradually incorporated into the mixture obtained at 3,
- 5. the mixing is continued,
- 6. the mixture is devolatilized, preferably
- 10 by heating to a temperature  $\geq 100^{\circ}\text{C}$ .

5. Process according to Claim 3,

characterized in that:

- 1'. the silicone oil and the water are homogenized,
- 15 - 2'. the particulate filler - preferably silica - and, at the same time, the first CA - preferably HMDZ - fraction are gradually incorporated into the mixture obtained at 1,
- 3. the mixing is continued,
- 20 - 4. the second CA - preferably HMDZ - fraction is gradually incorporated into the mixture obtained at 3,
- 5. the mixing is continued,
- 6. the mixture is devolatilized, preferably
- 25 by heating to a temperature  $\geq 100^{\circ}\text{C}$ .

6. Process according to Claim 3,

characterized in that:

- 1''. the silicone oil is introduced,
- 2''. the particulate filler - preferably silica - together with the first CA - preferably HMDZ - fraction and the water are gradually and simultaneously incorporated into the oil,
- 3. the mixing is continued,
- 4. the second CA - preferably HMDZ - fraction is gradually incorporated into the mixture obtained at 3,
- 5. the mixing is continued,
- 6. the mixture is devolatilized, preferably by heating to a temperature  $\geq 100^{\circ}\text{C}$ .
- 7. Process according to any one of Claims 1 to 6, characterized
  - in that the first CA fraction is replaced, completely or partly, with at least one processing aid chosen from molecules and combinations of molecules:
- capable of interacting with the particulate filler, particularly with silicon if a siliceous filler is used, to the detriment of the hydrogen bonds that this particulate filler establishes especially between its own atoms and/or with those of the silicone oil,
- and capable of being removed from the preparation mixture by devolatilization,

- and in that actions are taken to ensure that this processing aid is in the presence of water in the preparation mixture.

8. Process according to Claim 7,

5 characterized in that the processing aid is chosen from the group comprising:

- silazanes, HMDZ being preferred;
- difunctional, or preferably monofunctional, hydroxylated siloxanes;
- 10 - amines, preferably ammonia and/or alkylamines, diethylamine being particularly preferred;
- organic acids, formic and/or acetic acids being preferred;
- 15 - and mixtures thereof.

9. Process according to any one of Claims 1 to 8, characterized in that an alkenylated - preferably vinylated - silicone oil comprising at least two Si-alkenyl groups per molecule, each preferably located at  
20 one end of the chain, and having a dynamic viscosity at 25°C not exceeding 250 Pa.s, preferably not exceeding 100 Pa.s and more preferably still not exceeding 10 Pa.s, is employed,

and in that a silica having a BET specific  
25 surface area of between 50 and 400 m<sup>2</sup>/g and mixing conditions such that the dynamic viscosity at 25°C of the suspension does not exceed 300 Pa.s, preferably

does not exceed 250 Pa.s, and more preferably still does not exceed 200 Pa.s, are chosen.

10. Process for obtaining a silicone composition that can be cured by polyaddition,  
5 characterized in that it consists in mixing the following products:

- A - a suspension as prepared according to the process as defined in any one of Claims 1 to 9,
- 10 - B - one or more POS fluids (I), as defined in Claim 1,
- C - one or more POS fluids (II), as defined in Claim 1,
- D - optionally, one or more POS fluids  
15 (III), as defined in Claim 1, useful as diluent(s),
- E - a catalytic system comprising a catalyst, preferably of the platinum kind, and, optionally, an inhibitor.

20 11. Process according to Claim 10, characterized

- in that the composition is produced in the form of a two-component system comprising parts C<sub>1</sub> and C<sub>2</sub> which are intended to be brought into contact  
25 with each other in order to produce an elastomer crosslinked by polyaddition between the POS fluids (I) and (II)

- and in that care is taken to ensure that only one of the parts,  $C_1$  or  $C_2$ , contains some catalyst D and, optionally, one or other of the POS fluids (I) and (II).